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EXAMINER
DUDEK, J

ART UNIT	PAPER NUMBER
	5

2515
DATE MAILED:

03/22/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

- ☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire _____ month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claims 1-47 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1-5, 7-42, 44, 47 are rejected.

5. ☒ Claims 6, 43, 45-46 are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

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Part III DETAILED ACTION

Drawings

1. The drawings are objected to because Figures 15-18 are not designated by a legend such as "Prior Art". The legend is necessary in order to clarify what applicant's invention is. MPEP § 608.02(g). Correction is required.

Specification

2. The title of the invention is not sufficiently descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure.

Throughout the disclosure, the applicant refers to cross nicol deflecting plates; this is inconsistent with the drawings or the terminology used in the art. Therefore, the applicant has not disclosed how to make the deflecting plates described in the specification. Note that for the purpose of examination the deflecting plate 8 is considers to be a pair of crossed polarizers. Also the applicant has not disclosed how to make a very thin photo-blocking

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layer, i.e. 10^{-20} μm and how the embodiments requiring the photo-blocking would work when the width was zero.

Claim Rejections - 35 USC § 112

4. Claims 1-3, 5, 7-8, 10-11, 13-15, 17-20, 23-25, 27-28, 30-34, 36-37, 39-42 and 47 rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

5. Claims 10-13, 18, 23 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "an active element in matrix" is indefinite because it is unclear if the active element is a plurality of active element or only a single active element.

Claims 18 and 23 are included in this rejection because they depend from the above-rejected claims and thus inherently possess the above-noted deficiencies.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under

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this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

7. Claims 1-4, 10-12, 14-16, 18-21, 23, 30-42, 44 and 47 are rejected under 35 U.S.C. § 103 as being unpatentable over Kikuno (4,408,836).

Kikuno's figures disclose a liquid crystal display comprising:

- a. plurality of adjacent panels (10) in a main body each panel having pixel electrodes (15,16);
- b. first and second polarizers provide substantially over the entire front and rear surface (22,24);
- c. a second (or third) photo-blocking film (23) which covers an end surface of the connected part side of each liquid crystal panel in a predetermined trace width; note that the end of each display panel includes the end portion of the front and rear viewing surface of each panel as well as the side which is orthogonal to the normal of the front viewing surface.

What Kikuno does not disclose is:

- a. the polarizers having a cross nicol configuration,
- b. a first photo-blocking film covering the circumference of each pixel electrode,

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- c. an active element in a matrix,
- d. a thermosetting and/or ultraviolet-ray-setting resin, and
- e. a photo-blocking layer equal to the width of the first photo-blocking layer.

With respect to the polarizers having a cross nicol configuration, it is notoriously well known to use cross nicol configured polarizers, and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use cross nicol configured polarizers in the display of Kikuno since it was well known at the time the invention was made.

With respect to the first photo-blocking layer covering the circumference of each pixel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display of Kikuno with a first photo-blocking layer in order to prevent light leakage and thus increase the contrast of the display.

With respect to the active element matrix, to reduce the cost of manufacturing of large active matrix liquid crystal displays using a plurality of liquid crystal panels was a known solution. Since Kikuno display is large and uses a plurality of liquid crystal panels, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use transistors since it was well known in the art and active matrix displays have high picture quality.

With respect to the thermosetting and/or ultraviolet-ray-setting resin, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a

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thermo-setting and/or ultraviolet ray setting resin for the seal (13) of Kikuno since it was well known to in the art to use thermo-setting and/or ultraviolet ray setting resin as a sealant material.

Regarding the first photo-blocking layer absorbing light and being made of metal film and/or a photo-absorbing film, an organic film, or a resin with dispersed particles, these materials are all well known for their use as a light blocking mask in liquid crystal panels. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above described materials in the display of Kikuno since it was well known in the art at the time the invention was made.

8. Claims 7-9, 13, 17, 22, 24-29 are rejected under 35 U.S.C. § 103 as being unpatentable over Ohuchida et al. (5,106,197) in view of Kikuno.

Ohuchida et al.'s figure 8 discloses a liquid crystal display comprising a plurality of liquid crystal panels (15) mounted on two supporting substrates (13,17) each panel having pixel electrodes, a transistor matrix (see figure 3) and an adhesive material (16) connecting part of the liquid crystal panel. What Ohuchida et al. does not disclose is:

- a. a pair of cross nicol polarizers,
- b. a first photo-blocking mask,
- c. a second photo-blocking mask, and
- d. a thermosetting and/or ultraviolet-ray-setting resin.

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With respect to the pair of cross nicol polarizers, it is well known in the art to use twisted nematic liquid crystal for it low driving voltage and a gray scale capabilities. Also note that polarizers are required in twisted nematic displays, and cross nicol polarizers are well known in the art.

Since twist nematic liquid crystal panels require a pair of polarizers and it is well known to cross the plane of polarization of each polarizer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display of Ohuchida et al. with a pair of crossed polarizers like the polarizers used in the display of Kikuno since it was known to use twisted nematic for it low driving voltage and gray scale capabilities, and twisted nematic panel require a pair of polarizers.

With respect to the first and second photo-blocking layers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display of Ohuchida et al. with a photo-blocking layer at the connecting portions of each panel and around each pixel in order to reduce light leakage and thus increase contrast.

With respect to the thermosetting and/or ultraviolet-ray-setting resin, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a thermo-setting and/or ultraviolet ray setting resin for the seal (13) of Kikuno since it was well known to in the art to use thermo-setting and/or ultraviolet ray setting resin.

Allowable Subject Matter

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9. Claims 6, 43 and 45-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimazaki (5,146,853), Mosier (4,515,440) and Takahara et al. (4,906,071) each disclose liquid crystal displays with a plurality of panels.

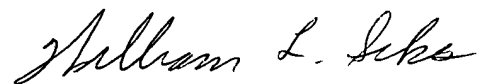
Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Dudek whose telephone number is (703) 308-4093.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Art Unit 2515 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Art Unit 2515 fax number is (703) 308-7726.

James Dudek
March 8, 1996


**WILLIAM L. SIKES
SUPERVISORY PATENT EXAMINER
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